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COMPLETE SPECIFICATION.

Improvements in Filter Presses.

We, SOCIETY OF CHEMICAL INDUSTRY IN BASLE (also known as GESELLSCHAFT FÜR CHEMISCHE INDUSTRIE IN BASEL), of Basle, Switzerland, a body corporate organised according to the laws of Switzerland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a filter press which can be heated.

According to the invention, in each of the frames of the filter press is suspended a heating element having the form of a hollow plate adapted to be heated internally.

As an illustration of the invention the accompanying drawings show in Fig. 1 a longitudinal section through a filter press according to the invention, and Fig. 2 shows an elevation of one of the frames of the press, partly in section.

The heating element consists of a hollow plate *b*, which is carried in the frame *a* by means of pins *x* and pipes *y*; so that it is free to expand under the influence of heat. It may be constructed of any suitable metal, advantageously iron, and if necessary can be protected from the action of vapours or liquids by a coating of a resistant metal, such as lead, nickel, silver, copper, or the like. It may carry external projections, corrugations or the like for increasing the surface in contact with the material filtered, so as to promote the drying effect. It may be heated by means of steam, hot water, hot oil or electrically.

In the filter press, frames *a* alternate in the usual manner with the filter plates *p*, over which the filtering cloths *f* are stretched. Within the free space of the frames *a* the heating element *b* is suspended in such a manner that between the plates *p* and the element *b* a space is left for taking up the material to be filtered, which space may be increased or diminished as desired by increasing or decreasing the thickness of the frames *a*. The press comprises the usual channel *k* for the mixture to be filtered and the

passages *e* through which the mixture passes from this channel into the spaces within the frames. The passages *e* and the channels *k* serve also as ducts for vapour evolved during the heating operation and the ducts *c*, which in the filtering operation serve for escape of the filtrate, may serve during the heating operation for the introduction of hot vapours or gases as may be desired.

The operation of drying the material filtered in such a press may be conducted as follows:—

The mixture to be filtered is forced by compressed air through the channel *k* and openings *e* into the filter frames and is filtered in the usual manner by passage of the liquid through the filter cloths. The filtrate is discharged through the ducts *c*. When the space in the filter frame is fully charged with material, more or less freed from liquid, a blast of air or the like is passed through the frame for the purpose of freeing the channel *k* and openings *e* from liquid and of forcing as much residual liquor as possible from the material filtered. The heating element is now heated, for instance by passage of steam through one of the pipes *y*, the exhaust steam leaving the element through the other pipe *y*. The steam or other vapour developed in the material being dried escapes through the openings *e* and channel *k* and this escape may be hastened by blowing hot gas or vapour through the ducts *c*; the channel *k* may be connected with the exhaust pipe. Since the heating occurs from within and the heating element is in direct contact with the material to be dried, drying is very rapid. A construction in which the heating elements are comprised in the plates *p* has the disadvantage that the elements are not in direct contact with the material, the filtering cloths intervening. In the construction of this invention the filtering cloths are not directly in contact with the heating surface, so that they are protected from the harmful effect of the heat. When the press is used for separating liquids of an organic nature, such

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as alcohol, benzene, nitrobenzene or the like; these liquids can be recovered easily and without loss.

5 The accompanying drawing only represents a suitable arrangement and it will be apparent that other constructions may be made within the invention.

10 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

15 1. A filter press comprising filter frames, in each of which is suspended a heating element having the form of a hollow plate adapted to be internally heated.

2. A process of drying filtered material in a press defined in claim 1, which consists in heating the heating element, after the filtering operation has been performed in the usual manner, and expelling evolved vapour, the expulsion being aided, if desired, by passage of hot gas or vapour through the filtered material, while it is in place. 20 25

Dated this 1st day of May, 1930.

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Fig. 1.

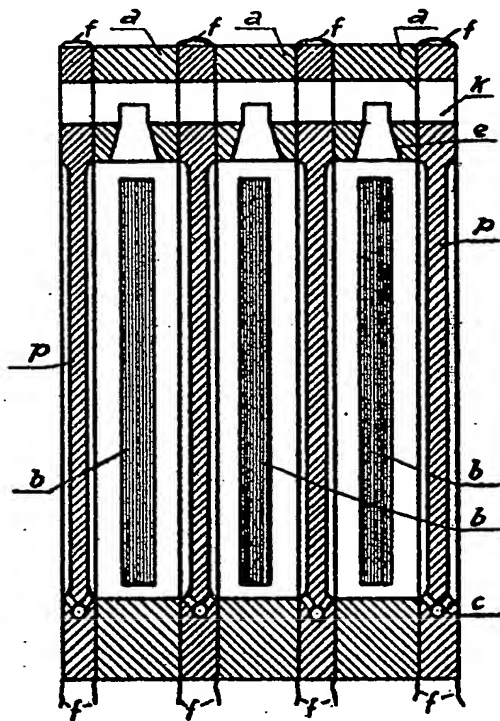
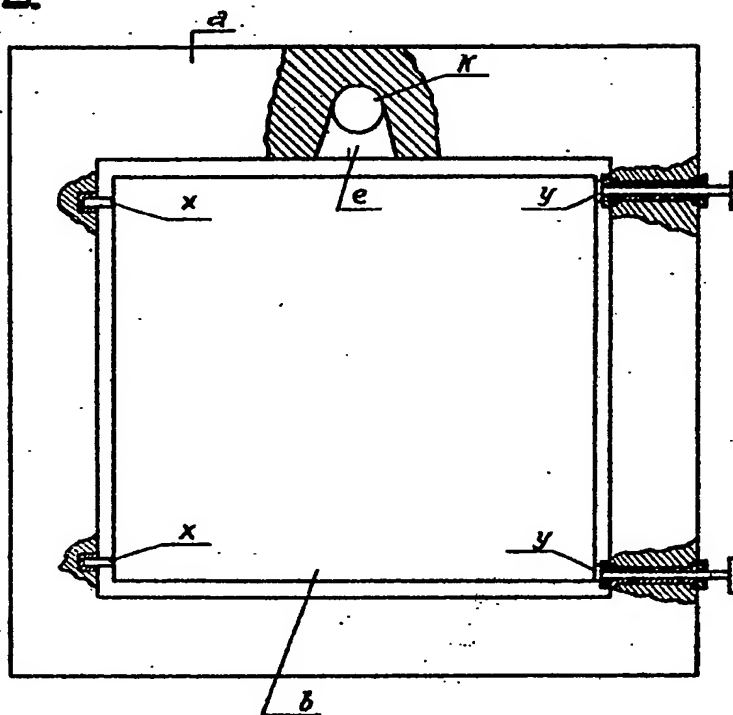


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

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